

CLAIMS

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is as follows:

1. A method for handling Session Initiation Protocol ("SIP") messages for voice over Internet Packet call control, comprising:
 - receiving a stream of SIP messages;
 - classifying the messages based on at least two message types;
 - placing said messages in separate queues associated to the message types;and
 - allocating SIP call control server processing resources to each queue according to a pre-defined policy.
2. The method of claim 1, wherein the step of classifying the messages comprises classifying the messages as a REGISTER, INVITE, or RE-INVITE message.
3. The method of claim 2, wherein the step of classifying the messages comprises classifying a message as an emergency call message by reading the destination address of a SIP INVITE message.
4. The method of claim 1, wherein the step of allocating resources comprises allocating varying degrees of server processing resources to individual queues of SIP messages by using a token-bucket rate control for processing individual queues; said rate of token generation for each queue being dictated by an importance attached to the message type.
5. The method of claim 1, wherein the step of allocating resources comprises controlling a rate at which messages from individual users are processed by a call

control server, thereby preventing denial-of-service attacks on the call control server by individual servers in a packet-based VoIP infrastructure.

6. A signal-bearing medium tangibly embodying a program of machine-readable instructions executable by a digital processing apparatus to perform a method for handling Session Initiation Protocol ("SIP") messages for voice over Internet

Packet call control, said method comprising:

receiving a stream of SIP messages;

classifying the messages based on at least two message types;

placing said messages in separate queues associated to the message types;

and

allocating SIP call control server processing resources to each queue according to a pre-defined policy.

7. The medium of claim 6, wherein the step of classifying the messages comprises classifying the messages as a REGISTER, INVITE, or RE-INVITE message.

8. The medium of claim 7, wherein the step of classifying the messages comprises classifying a message as an emergency call message by reading the destination address of a SIP INVITE message.

9. The medium of claim 6, wherein the step of allocating resources comprises allocating varying degrees of server processing resources to individual queues of SIP messages by using a token-bucket rate control for processing individual queues; said rate of token generation for each queue being dictated by an importance attached to the message type.

10. The medium of claim 6, wherein the step of allocating resources comprises controlling a rate at which messages from individual users are processed by a call control server, thereby preventing denial-of-service attacks on the call control server by individual servers in a packet-based VoIP infrastructure.

11. A system for handling Session Initiation Protocol ("SIP") messages for voice over Internet Packet call control, comprising:

- a classifier for receiving a stream of SIP messages and classifying the messages based on at least two message types;

- a plurality of queues associated to the message types;

- a SIP control server for directing calls corresponding to the messages and waiting to be served in the queues; and

- a scheduler for allocating SIP call control server processing resources to each queue according to a pre-defined policy.